



STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



JENNIFER M. GRANHOLM  
GOVERNOR

STEVEN E. CHESTER  
DIRECTOR

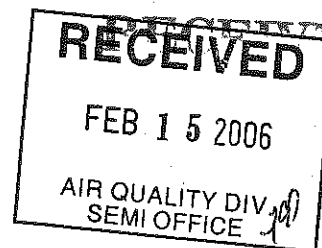
**RECEIVED**

MAR 22 2006

February 8, 2006

AIR ENFORCEMENT BRANCH  
U.S. EPA, REGION 5

Mr. Donald J. Chutas  
Cargill Salt  
916 South Riverside Avenue  
St. Clair, Michigan 48079-5335



Dear Mr. Chutas:

Enclosed is the Notice of Termination for Stipulation for Entry of Final Order by Consent, AQD No. 7-2001. This is in response to the request made by your company to the Michigan Department of Environmental Quality (DEQ), Air Quality Division (AQD).

If you have any questions regarding the enclosed notice, please contact Ms. Karen Hanses, Enforcement Unit, AQD, at 517-241-7621.

Sincerely,

G. Vinson Hellwig, Chief  
Air Quality Division  
517-373-7023

Enclosure

cc: Ms. Bonnie Bush, U.S. Environmental Protection Agency  
Ms. Renee Honore, U.S. Environmental Protection Agency  
Mr. Alan F. Hoffman, Department of Attorney General  
Ms. Teresa Seidel, DEQ  
Mr. Thomas Hess, DEQ  
Ms. Karen Hanses, DEQ

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION

\_\_\_\_\_  
In the matter of administrative proceedings )  
against **CARGILL, INCORPORATED**, a )  
corporation organized under the laws of the )  
State of Michigan and doing business at )  
916 South Riverside Avenue in the City of )  
St. Clair, County of St. Clair, State of Michigan )  
\_\_\_\_\_

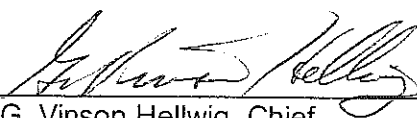
AQD No. 7-2001

NOTICE OF TERMINATION

This Notice is issued pursuant to a request for termination submitted by Cargill Salt, pursuant to paragraph 21 of the Stipulation for Entry of Consent Order and Final Order ("Consent Order"), AQD No. 7-2001. The request contained supporting information as required by paragraph 21 of AQD No. 7-2001. Review of this request and supporting information indicates that Cargill, Incorporated, has achieved compliance with the terms and requirements of the Consent Order.

THEREFORE, effective on the date signed below, AQD No. 7-2001 is terminated. The Department of Environmental Quality reserves the right to pursue administrative, civil and/or criminal proceedings, including the assessment of monetary fines, for any falsification of information submitted in support of Cargill Salt's request for termination of the Consent Order, or for any violation of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.5501 *et seq*; and all other applicable laws.

By: \_\_\_\_\_



G. Vinson Hellwig, Chief  
Air Quality Division  
Michigan Department of  
Environmental Quality

Date: \_\_\_\_\_

2-8-06



JOHN ENGLER, Governor

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

*"Better Service for a Better Environment"*

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: [www.deq.state.mi.us](http://www.deq.state.mi.us)

RUSSELL J. HARDING, Director

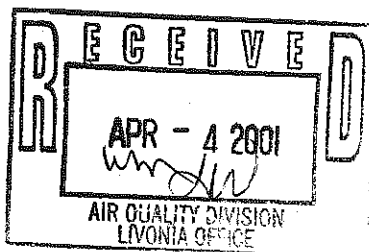
REPLY TO:

AIR QUALITY DIVISION  
PO BOX 30260  
LANSING MI 48909-7760

SRN: A6240  
CJM  
Blue Consent

March 30, 2001

Mr. Arlis Sayler  
Cargill, Incorporated  
916 S. Riverside Avenue  
St. Clair, MI 48079-5335



Dear Mr. Sayler:

Enclosed is your signed copy of "Stipulation for Entry of Final Order by Consent, AQD No. 7-2001" for your facility. Also, enclosed is a copy of the letter and Response to Comments document that was sent to people who commented and/or attended the public hearing.

Thank you for your cooperation.

Sincerely,

Karen Hanses  
Secretary  
Enforcement Unit  
Air Quality Division  
517-241-7621

/KJH

Enclosure

cc: Mr. Peter Spyropoulos, USEPA (without enclosures)  
Mr. Manoj Patel, USEPA  
Mr. Alan F. Hoffman, DAG  
Mr. Gerald Avery, DEQ  
Ms. Lillian Woolley, DEQ  
Mr. Tom Shanley, DEQ



JOHN ENGLER, Governor

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RUSSELL J. HARDING, Director

REPLY TO:

AIR QUALITY DIVISION  
PO BOX 30260  
LANSING MI 48909-7760

March 28, 2001

Dear Interested Party:

Thank you for commenting on the proposed Stipulation for Entry of Final Order by Consent (Consent Order) prepared for Cargill, Incorporated, to resolve alleged air quality violations at its facility at 916 South Riverside Avenue, St. Clair, Michigan.

Pursuant to state requirements, the Department of Environmental Quality (DEQ) held a 30-day public comment period regarding the terms and conditions of the proposed Consent Order. During the public comment period, the DEQ conducted a public hearing, recorded numerous comments, and received five letters. A Response to Comments document has been prepared to address questions and concerns raised during the public comment period.

The constructive comments received led the DEQ to make substantial modifications to the consent order. The modifications are outlined in the Response to Comments document. After carefully considering the issues, and pursuant to the authority delegated from the Director of the DEQ, I have approved Consent Order AQD No. 7-2001 with the modifications. The DEQ is committed to enforcing this Consent Order and holding Cargill, Incorporated, responsible for complying with the applicable air quality regulations.

Thank you for your input regarding the proposed Consent Order. Enclosed is a copy of the Response to Comments document and the final Consent Order.

Sincerely,

A handwritten signature in black ink that reads "Dennis M. Drake".

Dennis M. Drake, Chief  
Air Quality Division  
517-373-7023

THS:KJH  
Enclosure

cc: Ms. Lillian Woolley, DEQ  
Ms. Cynthia Mollenhour, DEQ  
Mr. Timothy McGarry, DEQ  
Mr. Thomas Shanley, DEQ

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**RESPONSE TO COMMENTS DOCUMENT**

**FOR**

**CARGILL, INCORPORATED**

**STIPULATION FOR ENTRY OF FINAL ORDER BY CONSENT**

**AQD NO. 7-2001**

**MARCH 15, 2001**

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John Engler, Governor  
Russell J. Harding, Director

**Air Quality Division**  
**Michigan Department of Environmental Quality**

*INTERNET: <http://www.deq.state.mi.us>*

This document has been prepared by the Michigan Department of Environmental Quality, Air Quality Division (AQD) to respond to the questions and comments received during the public comment period and public hearing. Questions regarding this document, or the final decision, should be directed to Mr. Thomas Shanley at 517-373-7056.

**Dennis M. Drake, Chief**  
**Air Quality Division**  
Hollister Building, 4th Floor  
106 West Allegan Street  
P.O. Box 30260  
Lansing, Michigan 48909-7760  
Phone: 517-373-7023  
Fax: 517-335-6993

The Michigan Department of Environmental Quality (MDEQ) will not discriminate against any individual or group on the basis of race, sex, religion, age, national origin, color, marital status, disability, or political beliefs. Questions or concerns should be directed to the MDEQ Office of Personnel Services, P.O. Box 30473, Lansing, MI 48909.

1. **Comment: Ambient air monitors should be installed in the community.**

Under the terms of the Stipulation for Entry of Final Order by Consent (Consent Order), Cargill will be installing a continuous opacity monitor (COM) on Boiler No. 5. The COM is a tool to measure the company's compliance with its opacity requirements. An ambient monitor would not provide a measure of the boiler opacity or demonstrate compliance with the company's mass emission limits. A single ambient monitor is not an effective way to identify an individual facility's impact on a community. Ambient air concentrations identified by ambient monitors are influenced by a number of sources including natural, distant, and other local industry sources. In order to identify Cargill's impact on the community, it would require a number of monitoring sites surrounding the facility. Installation, operation, and analysis costs associated with even a single monitor for a year are high. The COM will provide more definitive data and is a significantly more cost-effective way for both the company and the DEQ to evaluate the compliance air quality limits.

2. **Comment: Why is the Continuous Opacity Monitor (COM) only required for Boiler No. 5 and not for Boiler Nos. 1 and 2?**

Nearly all of the opacity/fallout problems, which the district staff has investigated, have been traced back to the operation of Boiler No. 5. The Consent Order requires the installation of a COM on Boiler No. 5 to ensure, on a continuous basis, the corrective action program required by the Consent Order is being implemented and is adequate to correct the historical non-compliance issues with Boiler No. 5.

3. **Comment: Why does Cargill blow soot at night?**

Cargill performed soot blowing infrequently before October 2000. The Company has said they have been blowing soot daily since October. Routine soot blowing is a common practice for most coal-fired boilers. Routine soot blowing helps to minimize fallout problems. As a result of comments received during the public comment period, we have added requirements that Cargill blow soot 5 times per calendar week and conduct a performance test on Boiler # 5 that will include a soot blowing event.

4. **Comment: With the installation of the automatic transformer rectifier sets on the electrostatic precipitator (ESP), will the automatic controls be set to maintain minimum opacity?**

The ESP, an air pollution control device, utilized for control of emissions from Boilers No. 1 & 2 is not considered to be a very large precipitator and operates in spark mode. As a result, Air Pollution Control Rule 330 requires the automatic controller be set to provide optimal power.

5. **Comment: What is the environmental benefit of modifying Boiler No. 5 to co-fire natural gas and coal?**

Boiler No. 5 is being modified to co-fire coal and natural gas as a Supplemental Environmental Project (SEP) under provisions of this Consent Order. A SEP is a project that a Company chooses to undertake to provide an environmental benefit beyond what would be required as a corrective action in the settlement. The SEP, in this case, is expected to reduce Sulfur Dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>), and Carbon Monoxide (CO) emissions. The reduction in SO<sub>2</sub> emissions has been estimated to be 38.3 tons per year. There is more uncertainty with the estimated reductions in NO<sub>x</sub> and CO but the reductions are estimated to be 11.1 and 4.5 tons per year, respectively. As a result of this and other comments received during the public comment period, particulate performance testing will be required after the modifications have been completed to ensure Boiler No. 5 will operate within the applicable particulate emission limits.

6. **Comment: A performance test should be conducted on Boiler No. 5 after the modifications to co-fire coal and natural gas have been completed.**

As a result of this comment, the revised Consent Order requires particulate performance testing within 180 days following the commencement of the continuous opacity monitor.

7. **Comment: A performance test should be conducted on the ESPs.**

The ESP is the control for the pulverized coal boilers (Boiler Nos. 1 & 2). At this time, there is no reason to believe Boilers Nos. 1 & 2 are operating in non-compliance. In fact, Boiler No. 1 has not operated for sometime. If there are future compliance issues with either Boiler No. 1 or 2, a performance test will be considered.

8. **Comment: Even with all the changes apparently completed to date, we are still experiencing flyash problems.**

The AQD staff feel the actions being taken by Cargill, and identified in the Consent Order, will be effective in bringing Cargill back into compliance with the applicable air regulations and permit requirements; however, if problems continue, we still need to hear from the public. The AQD Southeast Michigan district office last received a fallout complaint regarding Cargill's operations on November 2, 2000. Prior to that, AQD received a fallout complaint in August 2000. Public complaints are an integral part of our program. We rely on citizen complaints to help us identify existing and ongoing problems. If you continue to have concerns about Cargill's operations, please call the AQD Southeast Michigan district office at 734-953-8905. If there continues to be compliance problems in the future, AQD will enforce the applicable provisions of the Consent Order.

9. **Comment: Employees need to be better trained in both the operation of the equipment and the applicable environmental regulations.**

Our agency does not have the authority to require specific training on how to operate all industrial equipment. It is the responsibility of the company to ensure the employees are trained in the proper operation of their equipment so they maintain compliance with the applicable environmental rules and regulations. The DEQ has no authority to dictate how companies comply with the regulations and, therefore, cannot require training. If the equipment is not operated in such a way to comply with the air regulations, it will be identified during routine inspections by the AQD district staff.

10. **Comment: The acid in the flyash is taking its toll on the community.**

The provisions of the Consent Order were developed to correct the opacity, fallout, and flyash problems. The opacity monitor required will record continuous opacity from Boiler No. 5. If there are future opacity violations identified, Cargill will be subject to stipulated penalties of \$3,000 per violation per day. Though the AQD expects the improvements required in the Consent Order will be adequate to correct the opacity violations, if in the future opacity violations are recurring, a new, separate, enforcement action will be initiated in an attempt to develop a better corrective action program.

11. **Comment: The compliance status of this facility has gotten worse since Cargill took over.**

The recent non-compliance has resulted in this enforcement action. The compliance plan in the Consent Order is expected to obviate future non-compliance.

12. **Comment: Operations have resulted in fallout of salt in the community.**

It is believed that most of the salt fallout episodes that the community endured in the past were likely a result of the bulk loading operations. The company ceased using the bulk salt loading operations in May 2000. The emissions from the other salt processing operations are controlled by wet scrubbers. When operated properly, wet scrubbers are highly efficient control devices for these types of operations. To insure the company operates the wet scrubbers properly, procedures have been incorporated into the malfunction abatement plan, which is attached to the Consent Order. If the procedures identified in the MAP are not followed, the company is subject to \$1,500 stipulated penalties for each violation per day. In the unlikely event the procedures identified in the MAP are not adequate to control the salt emissions, the MAP will be revised to fix the problem or another enforcement action will be initiated.

13. **Comment: Boiler No. 5 should be controlled by an ESP.**

Each individual company determines what pollution control system is right for their operations. As long as the company can demonstrate they are/will be in compliance with all applicable environmental regulations, there is no reason for the company to change the control equipment. A mechanical collector and side-stream baghouse control the emissions from Boiler No. 5. In 1997, a stack test was conducted on Boiler No. 5. Results from that test indicate the company was in compliance with the particulate limit specified in their permit. As a result of comments received, and under terms of the Consent Order, Cargill will be required to conduct another performance test on Boiler No. 5 after the boiler modifications have been completed.

14. **Comment: The mixing of cold air from Boiler No. 1 not operating with the warm air from Boiler No 2 can cause condensation possibly affecting the efficiency of the ESP.**

Boilers No. 1 & 2, and the ESP, are designed in such a way that prevents air from Boiler No. 1 from entering effluent flow when it is not operating.

Boiler No. 1 is isolated from Boiler No. 2 and the ESP by a damper that is closed when Boiler No. 1 is not operating.

15. **Comment: Did a fire occur in the ESP several years ago and, if so, was the ESP compromised?**

The AQD has no knowledge of whether a fire occurred in the ESP in the past. Numerous inspections have been performed at the facility over the past several years, which included the evaluation of the ESP. At this point, there is no reason for the AQD to believe that the ESP has been compromised.

16. **Comment: The company should install opacity monitors on all stacks, including salt emitting stacks.**

As mentioned previously, it is believed that most of the salt fallout episodes the community endured in the past were likely a result of the bulk loading operations. The company ceased to use the bulk salt loading system in May 2000. Wet scrubbers control the emissions from the other salt operations. The operation and maintenance procedures for these scrubbers have been included in the Malfunction Abatement Plan (MAP), which is attached to the Consent Order as Exhibit A. It is believed that by complying with this MAP, excessive salt emissions from these processes will be abated.

17. **Comment: Why hasn't EPA closed the plant down?**

Under existing laws, environmental regulatory agencies can seek, from an appropriate court, an injunctive relief order to stop the emission of air pollution. This is a very time consuming and resource intensive process that is utilized in matters where the company in question refuses to resolve the matter and obtain compliance voluntarily or where there is an imminent and substantial endangerment to the public health, safety, welfare, or environment.

18. **Comment: Why does Cargill not operate under clean emission standards?**

Compliance with the terms of the Consent Order is expected to bring Cargill back into compliance with the emission standards. The continuous opacity monitor and performance testing required by the Consent Order are tools the DEQ will use to verify the company's compliance.

19. **Comment: Cargill should update their equipment or close down.**  
Older equipment in some cases may be more difficult to operate in a manner that minimizes its environmental impact. Although, in most cases, it is possible to operate older equipment within applicable emission limits. If Cargill can demonstrate compliance with the applicable particulate and opacity limit through their performance test and COM, they are allowed to operate their existing equipment.

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF THE DIRECTOR

In the matter of administrative proceedings  
against **CARGILL, INCORPORATED**, a  
corporation organized under the laws of the  
State of Delaware and doing business at  
916 South Riverside Avenue in the City of  
County of St. Clair, State of Michigan

AQD No. 7-2001

SRN #: A6240

STIPULATION FOR ENTRY OF FINAL ORDER  
BY CONSENT

This proceeding resulted from allegations by the Michigan Department of Environmental Quality ("MDEQ") Air Quality Division ("AQD") against Cargill, Incorporated ("Company"), a Delaware corporation located at 916 South Riverside Avenue in the City of St. Clair, County of St. Clair, State of Michigan ("St. Clair Facility").

The AQD alleges that the Company violated the following regulations at the St. Clair Facility:

Process	Letter of Violation	Alleged Violations	Description of Alleged Violation
Soda Ash Silo - EGSODAASH	October 23, 1998	MAC, 1997, R336.1284 ("Rule 284"); MAC, 1980, R336.1910 ("Rule 910").	Failure to maintain and operate control system properly.
Stoker Coal-Fired Boiler No. 5 - EGBOILERS	November 23, 1998	Permit to Install ("PTI") No. 199-75B, Special Condition No. 14; MAC, 1985, R336.1301 ("Rule 301")	Exceeded the 6 minute average of 20% opacity.
Salt Processing Operations vented to the third floor auxiliary scrubber - EGPRETZEL	July 29, 1999	MAC, 1980, R336.1910 ("Rule 910") & 40 Federal Code of Regulations ("CFR"), New Source Performance Standards ("NSPS"), Part 60, Subpart OOO	Failure to maintain and operate control system properly & failure to perform monitoring, reporting, record keeping, and testing requirements of NSPS.
	February 25, 2000	MAC, 1996, R336.1201 ("Rule 201")	Installed & operated a process without obtaining a permit.
North & South Micro Grinders - EGGRINDERN & EGGRINDERS; Salt Packaging Operations - EGPACKAGING	July 29, 1999	40 CFR, NSPS, Part 60, Subpart OOO	Failure to perform monitoring, reporting, record keeping, and testing requirements of NSPS.
Bulk Salt Loading - EGLOADING	February 25, 2000	40 CFR, NSPS, Part 60, Subpart OOO & MAC, 1996, R336.1201 ("Rule 201")	Failure to perform monitoring, reporting, record keeping, and testing requirements of NSPS; Emissions greater than 0.05 g/dscm identified via testing; Installed & operated a process without obtaining a permit.
Boiler Operations	July 28, 2000	MAC, 1980, R336.1901 ("Rule 901")	Flyash fallout deposited on nearby residences and property due to boiler upsets.

The Company and MDEQ stipulate to the termination of this proceeding by entry of a Stipulation for Entry of a Final Order by Consent ("Consent Order").

The Company and MDEQ stipulate as follows:

1. The Natural Resources and Environmental Protection Act, 1994 PA 451, ("Act 451"), MCL 324.101 et seq is an act to control pollution in this State.
2. Article II, Pollution Control, Part 55 of Act 451 ("Part 55"), MCL 324.5501 et seq provides for air pollution control regulations in this State.
3. The Michigan Department of Natural Resources ("MDNR") is authorized pursuant to Section 5503 of Part 55 to administer and enforce all provisions of Part 55. Section 301 of Part 3 provides the authority to the Director of the MDNR to delegate powers and duties.
4. The MDEQ was created as a principal department within the Executive Branch of the State of Michigan pursuant to Executive Order 1995-18. All statutory authority, powers, duties, functions and responsibilities of the MDNR AQD were transferred to the Director of the MDEQ ("Director").
5. The Director has delegated authority to the Chief of the AQD ("AQD Chief") to enter into this Consent Order.
6. The termination of this matter by a Consent Order pursuant to Section 5528 of Part 55 is proper and acceptable. This Consent Order resolves all allegations contained in the letters of violation dated October 23, 1998, November 23, 1998, July 29, 1999, February 25, 2000, and July 28, 2000.
7. The Company and the MDEQ agree that the signing of this Consent Order is for settlement purposes only and does not constitute an admission by the Company that the law has been violated.
8. This Consent Order becomes effective on the date of execution ("effective date of this Consent Order") by the AQD Chief.
9. The alleged excessive opacity and particulate emissions from the processing plant shall be abated and the Company shall achieve compliance with the aforementioned regulations in accordance with the requirements contained in this Consent Order.

#### COMPLIANCE PROGRAM AND IMPLEMENTATION SCHEDULE

##### 10. A. Malfunction Abatement Plan

On and after the effective date of this Consent Order, the Company shall implement its Malfunction Abatement Plan that has been approved by the AQD Southeast Michigan District Supervisor. The plan is attached as Exhibit A, incorporated by reference and made an enforceable part of

this Consent Order. The plan covers current operations at the facilities and may require modification or revision based on future operations. The Company shall comply with the existing plan, or any modification(s) to the plan that are approved by the AQD Southeast Michigan District Supervisor. Any subsequent, modified plans shall replace Exhibit A as an enforceable part of this Consent Order.

B. Permits

On and after the date of issuance of the Permit to Install (PTI) issued for the Pretzel / Nugget Operations (EGPRETZEL), for which the AQD has received an application and has identified as PTI No. 83-00, the company shall comply with all terms and conditions of that permit which will be attached to this Consent Order as Exhibit C, incorporated by reference, and made an enforceable part of this Consent Order.

C. Final Emission Limitations

1. On and after the effective date of this Consent Order, visible emissions from each of the two pulverized coal fired boilers No. 1 and No. 2 shall not exceed a 6-minute average of 20 percent opacity, except as specified in Rule 301 (1) (a) or as provided for in Rule 913 and Rule 914.

2. On and after the effective date of this Consent Order, visible emissions from the spreader-stoker coal-fired boiler No. 5 (Boiler No. 5), as recorded by the Continuous Opacity Monitor installed pursuant to paragraph 11, or observed by a certified observer using USEPA's Method 9, shall not exceed a 6-minute average of 20% opacity, except as specified in Rule 301 (1) (a) or as provided for in Rule 913 and Rule 914.

3. On and after the effective date of this Consent Order, pursuant to 40 CFR, Part 60, Subpart OOO, particulate emissions from the Pretzel / Nugget Operation (EGPRETZEL), Micro-Grinding Operations (EGGRINDERN & EGGRINDERS), and 3<sup>rd</sup> Floor Packaging Operation (EGPACKAGING) each shall not exceed 0.05 grams per dry standard cubic meter (g/dscm).

4. On and after the effective date of this Consent Order, pursuant to MAC R336.1331, particulate emissions from Boiler No. 5, shall not exceed 0.30 pounds per 1,000 pounds of exhaust gases, corrected to 50% excess air, as specified in Special Condition No. 13 of PTI No. 199-75B.

D. Process and Equipment Improvements

1. By May 31, 2000, the Company ceased to use the bulk salt loading system for loading trucks and railroad cars.

2. By January 31, 2000, the Company replaced the Boilers Nos. 1 & 2 electrostatic precipitator manual transformer rectifier sets with new automatically controlled units which

display average secondary amperage and average spark rate which meet the requirements of R.336.1330, Rule 330.

3. By September 1, 1999, the Company installed differential pressure gauges on NSPS Subpart OOO applicable wet scrubbers and baghouses.

4. By September 1, 1999, the Company installed scrubbing liquid flow rate meters on all NSPS Subpart OOO applicable wet scrubbers. This system automatically shuts down the process scrubber if there is a loss of water to the scrubbers.

5. By September 1, 1999, the Company updated its inspection and recordkeeping system to comply with NSPS Subpart OOO.

6. By July 1, 2000, the Company completed particulate emission testing of all emission units subject to NSPS Subpart OOO, and demonstrated compliance for each unit. Reports have been submitted to the AQD.

7. By January 1, 2001, the Company shall discontinue use of the existing outdoor bulk coal storage system, and replace it with a new coal delivery and storage system. The new system shall consist of a paved truck delivery area, a receiving bunker which can be heated in the winter to prevent coal freezing, and a modified conveyor system that will transfer the just-received coal to an inside storage bin.

8. By May 31, 2000, the Company replaced the steam dryers in four Alberger salt evaporation systems with natural gas fired dryers, to reduce the load on the coal fired boilers.

E. Automatic Instrument Control System for Boiler No. 5 Implementation Schedule

1. By November 1, 2000, the Company shall design and submit to the AQD acceptable plans and specifications along with a complete Permit to Install application, unless exempt under MAC R336.1278-1290, for the new instrument controls for Boiler No. 5. These new programmable PLC automatic controls will improve response time and will allow for the boiler airflow to be modulated based on oxygen concentrations.

2. By January 6, 2001, or if required, one week after the Permit to Install is issued, whichever is later, the Company shall submit to the AQD Southeast Michigan District Supervisor proof that the Company has placed on order the purchase and installation of the boiler controls.

3. By July 31, 2001, or if required, seven months after the Permit to Install is issued, whichever is later, the Company shall complete installation of the new instrument controls for Boiler No. 5.

MONITORING, REPORTING, & TESTING

## 11. A. Continuous Opacity Monitor on Boiler No. 5

1. By September 1, 2001, or 30 days after completing the installation of the Boiler No. 5 instrument controls required in paragraph 10.E.3., whichever is later, the Company shall begin monitoring and recording the visible emissions from Boiler No. 5 on a continuous basis in a manner and with instrumentation acceptable to the AQD. Prior to installation, the Company shall submit a Monitoring Plan to the AQD Southeast Michigan District Supervisor for review and approval. The Monitoring Plan shall include drawings or specifications showing the proposed location and description of the required monitor. The continuous opacity monitoring system (COMS) shall be installed, calibrated, maintained and operated in accordance with the procedures set forth in 40 CFR 60.13 and Performance Specification 1 (PS1) of Appendix B, 40 CFR Part 60. The span value shall be 2.0 times the lowest emission standard or as specified in the federal regulations. No less than 30 days prior to the performance specification testing of the COMS a complete test plan must be submitted to the AQD Southeast Michigan District Supervisor. The final test plan must have approval prior to the testing. The Company shall submit to the AQD Southeast Michigan District Supervisor within 30 days of completion, two (2) copies of the final report demonstrating the COMS complies with the requirements of PS1. Further, all monitoring data shall be kept on file for a period of at least three (3) years and made available to the AQD Southeast Michigan District Supervisor upon request.

2. In accordance with 40 CFR Part 60.7(c) and (d) the Company shall submit a written excess emission report (EER) and summary report in an acceptable format to the AQD Southeast Michigan District Supervisor within 30 days of the end of each calendar quarter. The EER shall include the magnitude, in actual percent opacity, of each six-minute average of opacity greater than 20% and the time period represented by such averages. It shall also include the cause of the excess emissions, if known, periods of COMS downtime, any corrective actions taken and total operating time of the source. If no exceedances or COMS downtime occurred during the time period the Company shall report that fact. The Company shall perform an annual audit of the COMS using the procedures set forth in USEPA publication No. 450/4-92-010, "Performance Audits Procedures for Opacity Monitors", and all amendments thereto. The results of the annual audit shall be submitted to the AQD Southeast Michigan District Supervisor within 30 days of completion.

## B. Particulate Emission Testing

1. The Company shall conduct testing in accordance with methods and procedures approved by the AQD Southeast Michigan District Supervisor to demonstrate compliance

with the particulate matter emission limitation specified in paragraph 10.C.4 of this Consent Order. The testing shall also include the effect of soot blowing and the test plan submitted pursuant to paragraph 11.B.1.a. shall include the soot blowing testing procedure. Testing shall be conducted in accordance with the following schedule:

a. Within ninety (90) days following the commencement of the COMS required in paragraph 11.A.1., the Company shall submit a test plan which meets the requirements specified in Exhibit B to the AQD Southeast Michigan District Supervisor and the Compliance Support Unit Chief for approval prior to testing.

b. Within one hundred and eighty (180) days, following commencement of the COMS required in paragraph 11.A.1., the Company shall have completed the testing in accordance with the approved test plan.

c. No less than seven (7) days prior to testing, the Company shall notify the AQD Southeast Michigan District Supervisor of the final test schedule.

d. Within sixty (60) days following the last date of testing, the Company shall submit to the AQD Southeast Michigan District Supervisor a test report, which includes the test data and results, in accordance with the requirements specified in Exhibit B.

#### SUPPLEMENTAL ENVIRONMENTAL PROJECT

12. A. By November 1, 2000, the Company shall design and shall submit to the AQD, acceptable plans and specifications and a complete Permit to Install application to add natural gas burner(s) to Boiler No. 5, unless exempt under MAC R336.1278-1290.

B. By January 6, 2001, or one week after the Permit to install is approved, whichever is later, the Company shall submit to the AQD Southeast Michigan District Supervisor proof that the Company has placed on order the purchase and installation of the gas fired burner(s).

C. By July 31, 2001, or seven (7) months after the Permit to Install is approved, whichever is later, the Company shall place the gas burner(s) in service.

D. After the gas burner is placed in service as required by paragraph 12.C., the Company shall use natural gas for start up of Boiler No. 5 and use natural gas for not less than 6% of the total heat input to Boiler No. 5 on a 12 month rolling average basis. This rolling average shall be determined at the end of each calendar month beginning six months after the gas burner(s) have been placed in service.

E. The Company shall keep records of the coal and natural gas usage rates for Boiler 5 and shall calculate the fraction of heat input provided by natural gas on a monthly basis in a manner acceptable to the AQD Southeast Michigan District Supervisor. These records shall be kept on file for the life of this Consent Order and made available to the MDEQ upon request.

#### NOTIFICATION

13. On and after the effective date of this Consent Order, the Company shall provide notification and a written report of any abnormal conditions, start-up, shutdown, or malfunction of process and/or control equipment, in accordance with the provisions and requirements of MAC R336.1912 ("Rule 912") to the AQD Southeast Michigan District Supervisor.

#### GENERAL PROVISIONS

14. On and after the effective date of this Consent Order, except as otherwise provided by the administrative Rules of Part 55, the Company shall not install, construct, reconstruct, relocate, alter or modify any process or process equipment including control equipment pertaining thereto, which may emit an air contaminant, unless a permit to install which authorizes such action is issued by the MDEQ pursuant to Rule 201, or the Company is issued a waiver pursuant to MAC 1980 R336.1202 ("Rule 202"), or the Company successfully demonstrates an applicable exemption under MAC Rules R336.1280 through R336.1290 ("Rules 280 through 290").

15. Within thirty (30) days after the effective date of this Consent Order, the Company shall pay to the General Fund of the State of Michigan, in the form of a check made payable to the "State of Michigan" and delivered to the Michigan Department of Environmental Quality, Cashier's Office, P.O. Box 30657, 300 S. Washington Square, Suite 457, Lansing, Michigan 48909-8157, a settlement amount of \$ 38,900.00. To ensure proper credit, all payments made pursuant to this Consent Order shall include the Agreement Identification No. AQD3109 on the face of the check. This settlement amount is in addition to any fees, taxes, or other fines that may be imposed on the Company by law.

16. On and after the effective date of this Consent Order, if the Company fails to comply with paragraph 14 of this Consent Order, the Company shall pay a stipulated fine of \$10,000.00 per violation. On and after the effective date of this Consent Order, if the Company fails to comply with paragraphs 12.D. or 12.E. of this Consent Order, the Company shall pay stipulated fines of \$5000.00 for each calendar month in which a violation of paragraphs 12.D. or 12.E. occurred. On and after the effective date of this Consent Order, if the Company fails to comply with paragraphs 10.C.1., 10.C.2., 10.C.3., or

10.C.4. of this Consent Order, the Company shall pay stipulated fines of \$3000.00 per violation per day. On and after the effective date of this Consent Order, if the Company fails to comply with paragraphs 10.A., 11.A.1., or 11.B. of this Consent Order, the Company shall pay stipulated fines of \$1500.00 per violation per day. If the company fails to place the natural gas burner(s) in service in accordance with the schedule specified in paragraph 12.C., the company shall pay stipulated fines of \$5,000 for every 30 days the company is late in placing the gas burners in service, the sum of which shall not to exceed \$113,000.00 plus interest from the effective date of this Consent Order. Payment of the \$113,000.00 plus interest stipulated fine, in the event the company fails to place the natural gas burner(s) in service as required by paragraphs 12.C., shall resolve the Company's obligations to perform the Supplemental Environmental Project pursuant to paragraphs 12.A., 12.B., 12.C., 12.D. and 12.E.. If the purchase and installation costs for the natural gas burners is less than \$350,000.00, the Company shall pay stipulated fines of \$2,100.00 plus interest from the effective date of this Consent Order for each \$10,000.00 (or fraction thereof) below which the purchase was made. The sum of all stipulated fine payments made as a result of failure to comply with paragraphs 12.A., 12.B., 12.C., 12.D. and 12.E. shall not exceed \$113,000.00 plus interest from the effective date of this Consent Order. On and after the effective date of this Consent Order, if the Company fails to comply with any other provision of this Consent Order, the Company shall pay stipulated fines of \$500.00 per violation per day. Stipulated fines submitted under this Consent Order shall be by check, payable to the State of Michigan within 30 days of demand and shall be delivered to the Michigan Department of Environmental Quality, Cashier's Office, P.O. Box 30657, 300 S. Washington Square, Suite 457, Lansing, Michigan 48909-8157. To ensure proper credit, all payments shall include the Agreement Identification No. AQD3109 on the face of the check. Payment of stipulated fines shall not alter or modify in any way the Company's obligation to comply with the terms and conditions of this Consent Order.

17. The AQD, at its discretion, may seek stipulated fines or statutory fines for any violation of this Consent Order which is also a violation of any provision of applicable federal and state law, rule, regulation, permit, or MDEQ administrative order. However, the AQD is precluded from seeking both a stipulated fine under this Consent Order and a statutory fine for the same violation.

18. To insure timely payment of the settlement amount assessed in paragraph 15 and any stipulated fines assessed pursuant to paragraph 16 of this Consent Order, the Company shall pay an interest penalty to the State of Michigan each time it fails to make a complete or timely payment under this Consent Order. The interest penalty shall be determined at a rate of twelve percent (12%) per year compounded annually, using the full increment of amount due as principal, calculated from the due date

specified in this Consent Order until the date that delinquent payment is finally paid in full. Payment of an interest penalty by the Company shall be made to the State of Michigan in accordance with paragraph 15 of this Consent Order. Interest payments shall be applied first towards the most overdue amount or outstanding interest penalty owed by the Company before any remaining balance is applied to subsequent payment amount or interest penalty.

19. The Company agrees not to contest the legal basis for the settlement amount assessed pursuant to paragraph 15. The Company also agrees not to contest the legal basis for any stipulated fines assessed pursuant to paragraph 16 of this Consent Order, but reserves the right to dispute in a court of competent jurisdiction the factual basis upon which a demand by MDEQ of stipulated fines is made. In addition, the Company agrees that said fines have not been assessed by the MDEQ pursuant to Section 5529 of Part 55 and therefore are not reviewable under Section 5529 of Part 55.

20. This compliance program is not a variance subject to the 12 month limitation specified in Section 5538 of Part 55.

21. This Consent Order shall remain in full force and effect for a period of at least three (3) years. Thereafter, the Consent Order shall terminate only upon written notice of termination issued by the AQD Chief. Such written notice shall not be unreasonably withheld. Prior to issuance of a written notice of termination, the Company shall submit a request consisting of a written certification that the Company has fully complied with all the requirements of this Consent Order and has made all payments including all stipulated fines required by this Consent Order. Specifically, this certification shall include: (i) the date of compliance with each provision of the compliance program and the date any payments or stipulated fines were paid; (ii) a statement that all required information has been reported to the AQD Southeast Michigan District Supervisor; (iii) confirmation that all records required to be maintained pursuant to this Consent Order are being maintained at the facility; and, (iv) such information as may be requested by the AQD Chief pertaining to the Company's compliance with this Consent Order.

22. The provisions of this Consent Order shall be binding on the parties to this action, their officers, servants and employees. In the event the Company sells or transfers the St. Clair Facility, it shall advise any purchaser or transferee of the existence of this Consent Order in connection with such sale or transfer. Within 30 calendar days, the Company shall also notify the AQD Southeast Michigan District Supervisor, in writing, of such sale or transfer, the identity and address of any purchaser or transferee, and confirm the fact that notice of this Consent Order has been given to the purchaser and/or transferee. The purchaser and/or transferee of this Consent Order must agree, in writing, to assume all of the obligations of this Consent Order. A copy of that agreement shall be forwarded to the AQD

Southeast Michigan District Supervisor within 30 days of assuming the obligations of this Consent Order.

23. Prior to the effective date of this Consent Order and pursuant to the requirements of Sections 5511 and 5528(3) of Part 55, the public was notified of a 30-day public comment period and was provided the opportunity for a public hearing.

24. Section 5530 of Part 55 may serve as a source of authority but not a limitation under which the Consent Order may be enforced. Further, Part 17 of Act 451 and all other applicable laws and any other legal basis or applicable statute may be used to enforce this Consent Order.

The undersigned certifies that he/she is fully authorized by the Company to enter into this Consent Order and to execute and legally bind the Company to it.

CARGILL, INCORPORATED

Ardis Saylor Plant Manager

Print Name and Title

Ardis Saylor

Signature

Date: 3-6-01

The above signatory subscribed and sworn to before me this 6<sup>th</sup> day of March, 2001.

Barbara J. Hija  
Notary Public

BARBARA J HIJA  
NOTARY PUBLIC ST CLAIR CO., MI  
MY COMMISSION EXPIRES Jan 13, 2005

Approved as to Content:

Approved as to Form:

Richard S. Johns (ACTING)  
Dennis M. Drake, Chief  
AIR QUALITY DIVISION  
MICHIGAN DEPARTMENT OF  
ENVIRONMENTAL QUALITY

Alan F. Hoffman  
Alan F. Hoffman, Section Head  
ENVIRONMENTAL REGULATION SECTION  
NATURAL RESOURCES AND  
ENVIRONMENTAL QUALITY DIVISION  
DEPARTMENT OF ATTORNEY GENERAL

Dated: 3-30-01

Dated: 3-13-01

FINAL ORDER

The Chief of the Air Quality Division having had opportunity to review the Consent Order and having been delegated authority to enter into Consent Orders by the Director of the Michigan Department of Environmental Quality pursuant to the provisions of Part 55 of Act 451 and otherwise being fully advised on the premises,

HAS HEREBY ORDERED that the Consent Order is approved and shall be entered in the record of the MDEQ as a Final Order.

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

Richard M. Drake (ACTING)

Dennis M. Drake, Chief  
Air Quality Division

Dated: 3-30-01

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## List of appendices

- A Inspection logs
- B Operating parameters

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## 1. Introduction

This Malfunction Abatement Plan (MAP) is for the Cargill, Inc. – Salt facility located in St. Clair, Michigan. This MAP was prepared in accordance with the Michigan Department of Environmental Quality's (MDEQ) October 23, 1998 letter to Cargill Salt.

In accordance with MDEQ Rule 911, the purpose of this MAP is to provide the following:

- 1) a complete preventative maintenance program, including:
  - identification of the supervisory personnel responsible for overseeing the inspection and maintenance and repair of air-cleaning devices
  - description of the items or conditions that are to be inspected
  - identification of the frequency of inspections or repairs
  - identification of the major replacement parts that are to be maintained in inventory for quick replacement
- 2) identification of the air emission source and air-cleaning device operating variables that are to be monitored to detect a malfunction or failure including:
  - identification of the normal operating ranges of these variables
  - descriptions of the monitoring or surveillance procedures to be used
- 3) description of the corrective procedures or operational changes that are to be taken in the event of a malfunction or failure to achieve compliance with the applicable emission limits.

This plan is subject to change as equipment covered by the plan are removed or modified.

The following air emission sources and associated air pollution control equipment are included in this MAP. Sources that have been removed are noted below, however no further discussion of the removed sources will be made in the MAP:

Emission point	Description
001	<ul style="list-style-type: none"><li>EGBOILER1 &amp; EGBOILER2 – 2 pulverized-coal-fired boilers #1 and #2 and associated electrostatic precipitator</li><li>EGBOILER 5 - 1 spreader stoker coal-fired boiler #5 and associated mechanical collector and baghouse</li></ul>
005	<ul style="list-style-type: none"><li>EGFLYASHSILO - ash silo and associated mechanical collector and water wash system</li></ul>
006	<ul style="list-style-type: none"><li>EGPACKAGING - third floor wet scrubber</li></ul>
007	<ul style="list-style-type: none"><li>EGSCREENING – fourth/fifth floor wet scrubber</li></ul>
008	<ul style="list-style-type: none"><li>EGDURACUBE - Dura-cube system and associated wet scrubber</li></ul>
010	<ul style="list-style-type: none"><li>EGLOADING - bulk salt loading operations and associated wet scrubber (removed 4/00)</li></ul>
014	<ul style="list-style-type: none"><li>EGALBERGERA – rotary kiln dryer and associated wet scrubber (REMOVED 5/00)</li></ul>
015	<ul style="list-style-type: none"><li>EGALBERGERB – Alberger B fluid-bed salt dryer and associated wet scrubber (REMOVED 2/00)</li></ul>
017	<ul style="list-style-type: none"><li>EGALBERGERC - Alberger F fluid-bed salt dryer and associated wet scrubber (REMOVED 5/00)</li></ul>
022	<ul style="list-style-type: none"><li>EGSODAASH - soda ash silo and associated dust collection bags</li></ul>
024/025	<ul style="list-style-type: none"><li>EGGRINDERN/EGGRINDERS - 2 micro-grinder systems and associated baghouses</li></ul>
026	<ul style="list-style-type: none"><li>EGCMFCOOLER - CMF fluid-bed salt cooler and associated wet scrubber (Ceased operation 3/00)</li></ul>
031	<ul style="list-style-type: none"><li>EGPRETZEL - new auxiliary third-floor wet scrubber</li></ul>

The following chapters discuss the contents of the MAP for the Cargill Salt facility.

As required by MDEQ Rule 911(a), Cargill Salt has developed a preventative maintenance program. The following sections provide the details of this program for each of the control devices listed in Chapter 1.

In accordance with MDEQ Rule 911(2)(b), Cargill Salt is required to identify control device parameters and variables that will be monitored for the purpose of detecting a malfunction or failure. The following sections identify the information requirements for the wet scrubbers, baghouses, electrostatic precipitators, and mechanical collectors.

The following sections also outline the procedures Cargill Salt will implement in the event of a malfunction or failure to achieve compliance with applicable emission limits.

---

## 2. Wet scrubbers

Cargill Salt operates wet scrubbers in conjunction with the following emission sources:

- EGPACKAGING (#88-85) - operation consisting of process lines which include screens, scales and bagging systems; vented to third floor east wet scrubber (EP006)
- EGSCREENING - screening and grading operations which include numerous conveyors, screens, three pellet presses, and bagging machines; vented to fourth/fifth floor wet scrubber (EP007)
- EGDURACUBE - Dura-cube system which is used to produce a compacted water-softening product; vented to a W.W. Sly wet scrubber (EP008)
- EGPRETZEL - salt processing operations including pretzel, flour, fine, and flake grades of salt processing; vented to the third floor west wet scrubber (EP031).

### 2.1. Supervisory personnel

The following supervisory personnel have been designated as being responsible for overseeing the inspection, maintenance, and repair of the wet scrubbers:

*Dry End Superintendent* – Dura-cube system wet scrubber (EGDURACUDE), third floor east wet scrubber (EGPACKAGING), third floor west wet scrubber (EGPACKAGING), and fourth/fifth floor wet scrubber (EGSCREENING).

## 2.2. Device Monitoring

### 2.2.1. Pressure drop

Cargill Salt will continuously monitor the pressure drop across the scrubbers. The normal operating range for this parameter for each of the wet scrubbers has been provided in Appendix B. Pressure drops that are greater than recommended values indicate that particulate matter may be building up in the scrubber column. Pressure drops less than the recommended range may indicate system leaks. Pressure drop will be monitored through the use of manahelic gauges or equivalent devices.

### 2.2.2. Water flow rate

Cargill Salt will continuously monitor the water flow rate through the use of flow meters. Specified water flow rates for each scrubber are included in Appendix B. Flow rates that are below the recommended values indicate that the spray chamber or spray nozzle may be plugged or the pump is not operating correctly.

The flow rates on the following scrubbers will be monitored and recorded daily; EGPACKAGING (EP006), EGSCREENING (EP007), EGDURACUBE (EP008) AND EGPRETZEL (EP031). Corrective actions will be taken if the flow rate of the scrubbers is outside of the specified range

The scrubbers are designed to cease operation if the water flow falls below 5 GPM.

An example of the type of daily inspection form that will be utilized has been included as Table A-1 of Appendix A of this MAP. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

## 2.3. Inspection parameters and frequency

Each of the four wet scrubbers described above will be inspected regularly. The purpose of these inspections is to identify variances from normal or required operating parameters. The following parameters, where practical, will be included in the inspection for each:

Daily inspections

- pressure drop
- water flow rate

Monthly inspections

- scrubber recirculation system for possible solids buildup
- access doors for possible leaks
- scrubber nozzles for possible plugging
- check for possible drainage backup
- check for corrosion of the scrubber shell
- vibration analysis on fans

Annual inspections

- ductwork for possible buildup of particulate matter
- bolts and welds for deterioration or corrosion
- fan belts/tension
- fan blades for corrosion/abrasion

## 2.4. Major replacement parts

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the wet scrubbers:

- spray nozzles
- bolts
- fan belts.

## 2.5. Wet scrubbers

If operating parameters described above deviate from the pre-determined acceptable ranges, Cargill Salt will conduct inspections of the wet scrubber system.

The following parameters will be included in wet scrubber system inspections:

- scrubber spray chambers for possible plugging
- scrubber nozzles for possible plugging
- nozzle spray flow rate for decreased flow rate and poor irrigation
- scrubber recirculation system for possible solids buildup
- pump for proper operation

If, as a result of these inspections, it is discovered that low flow rate, solids buildup, or plugging are the cause of the scrubber malfunction, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correcting the identified scrubber malfunction.

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### 3. Baghouse filters

Cargill Salt operates baghouse filters in conjunction with the following emission sources:

- EGBOILER5 - 1 spreader stoker coal-fired boiler (#5); vented to baghouse (EP001)
- EGSODAASH - 1 soda ash silo; vented to dust collection bags (EP022)
- EGGRINDERN/EGGRINDERS - 2 micro-grinder systems; vented to two baghouses (EP024/EP025).

#### 3.1. Supervisory personnel

The following supervisory personnel have been designated as being responsible for overseeing the inspection, maintenance, and repair of the baghouse filters:

*Wet End Superintendent* – one spreader stoker coal-fired boiler (#5) and associated baghouse; and one soda ash silo and associated dust collection bags

*Dry End Superintendent* – two micro-grinder systems and associated baghouses.

#### 3.2. Baghouses

##### 3.2.1. Pressure drop

Cargill Salt will continuously monitor the pressure drop across the collection media on the baghouses. The normal operating range for this parameter for each of the baghouses has been provided in Appendix B. Pressure drops that are greater than recommended values indicate that bleed-through or blinding of the filter media may be occurring. Pressure drops less than recommended values may indicate bag tears or system leaks. Improper bag pulse operation will also be indicated by high or low pressure drop readings. Pressure drop will be monitored through the use of a magnahelic gauge or equivalent devices.

An example of the type of daily inspection form that will be utilized has been included as Table A-1 of Appendix A of this MAP. Monthly and

annual inspections will be administered and documented with Cargill's maintenance management system.

### 3.3. Coal boiler baghouse inspection parameters and frequency

The coal boiler baghouse (EP001) described above will be inspected regularly. The following parameters, where practical, will be included in the inspection for each:

#### Continuously monitored

- differential pressure (inches of water column ["wc])
- pulse air pressure

#### Daily inspections

- heat exchanger fan
- booster fan inspection
- ash hopper emptied daily

#### Monthly inspections

- access doors for possible leaks
- air lines and fittings for possible leaks
- door seals for possible deterioration

#### Annual inspections

- pulse pipe alignment
- fan belt, tension, etc.
- ductwork for possible buildup of dust
- bolts and welds for corrosion or deterioration
- visual inspection of dirty side bags for possible leaks
- check clean air side for bag leaks
- fan blades for possible corrosion or abrasion.

### 3.4. Micro grinder baghouse inspection parameters and frequency

The micro-grinder baghouses (EP024/EP025) described above will be inspected regularly. The following parameters, where practical, will be included in the inspection for each:

#### Daily inspections

- heat exchanger fan
- booster fan inspection
- ash hopper emptied daily

Monthly inspections

- access doors for possible leaks
- air lines and fittings for possible leaks
- door seals for possible deterioration
- pulse sequencing and timing

Annual inspections

- pulse pipe alignment
- fan belt, tension, etc.
- ductwork for possible buildup of dust
- bolts and welds for corrosion or deterioration
- visual inspection of dirty side bags for possible leaks
- check clean air side for bag leaks
- fan blades for possible corrosion or abrasion

### **3.5. Soda ash silo bag inspections and frequency**

The facility currently operates a soda ash silo (EP022) for storage purposes. The emissions generated by this silo are directed to bag filters. The facility has implemented the following Best Management Practices for the reduction of generated dust from this source:

- Daily visual inspections for torn bags or loose detached drums will be conducted.
- Visual inspections of liner and dust bag will be conducted on the days a load of soda ash is delivered. Liner and dust bag will be checked for accumulation and will be emptied as needed. Spillage on the ground resulting from dumping the drums or unloading the trucks will be cleaned up immediately.

### **3.6. Major replacement parts**

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the baghouses:

- fan motors
- bag cages
- bags
- bolts
- fan belts.

### 3.7. Corrective procedures

If operating parameters deviate from the pre-determined acceptable ranges, Cargill Salt will conduct inspections of the baghouse system.

The following parameters will be included in baghouse system inspections:

- check clean air side for bag leaks
- visual inspection of dirty air side for bag leaks
- inspection of lines and ductwork for leaks.

If, as a result of these inspections, it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

---

## 4. Electrostatic precipitators

Cargill Salt operates an electrostatic precipitator (ESP) in conjunction with the following emission source:

- EGBOILER1/EGBOILER2 - 2 pulverized-coal-fired boilers #1 & #2 (EP001).

### 4.1. Supervisory personnel

The following supervisory personnel have been designated as being responsible for overseeing the inspection, maintenance, and repair of the ESP:

*Wet End Superintendent* – two pulverized-coal-fired boilers, #1 and #2, and associated electrostatic precipitator.

### 4.2. Device Monitoring

#### 4.3.1. Amperage

Cargill Salt will monitor the primary and secondary amperage data for the electrostatic precipitator system. Amperage readings that are higher or lower than recommended values could indicate excessive dust buildup on collection plates, dust on insulators, or insufficient sparking.

#### 4.3.2. Voltage

Cargill Salt will monitor the primary and secondary voltage data for the electrostatic precipitator system. Voltage readings that are higher or lower than the recommended values could indicate excessive dust buildup on collection plates, dust on insulators, or insufficient sparking.

#### 4.3.3. Spark rate

Cargill salt will monitor the spark rate data for the electrostatic precipitator. Typical sparking rate should be between 20-50 sparks per minute. A spark rate outside of this range may indicate that the system may be malfunctioning or needs to be re-calibrated.

#### 4.3. Inspection parameters and frequency

The electrostatic precipitator described above will be inspected regularly. The following parameters, where practical, will be included in the inspections:

##### Daily inspections

- voltage readings
- amperage readings
- spark rate
- ash hopper will be emptied daily

##### Monthly inspections

- access doors for possible leaks
- air lines and fittings for possible leaks
- operation of rappers

##### Annual inspections

- ductwork for possible buildup of dust
- visual check of insulation for deterioration
- bolts and welds for corrosion or deterioration
- fan blades for possible corrosion/abrasion.

An example of the type of daily inspection form that will be utilized has been included as Table A-3 of Appendix A of this MAP. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

#### 4.4. Major replacement parts

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the electrostatic precipitator:

- electrode wires
- bolts
- rappers
- insulators.

#### 4.5. Corrective Procedures

If operating parameters deviate from the pre-determined acceptable ranges, Cargill Salt will conduct inspections of the electrostatic precipitator system.

The following parameters will be included in electrostatic precipitator system inspections:

- check that the hopper is empty
- inspection of lines and ductwork for leaks or particulate matter buildup
- inspect for loose electrode wires.

If, as a result of these inspections, it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

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## 5. Mechanical collectors

Cargill Salt operates mechanical collectors in conjunction with the following emission sources:

- EGBOILER5 - spreader stoker coal-fired boiler #5 (EP001)
- EGFLYASHSILO - fly ash silo (EP005).

### 5.1. Supervisory personnel

The following supervisory personnel have been designated as being responsible for overseeing the inspection, maintenance, and repair of the mechanical collectors:

*Wet End Superintendent* – spreader stoker coal-fired boiler #5 and the fly ash silo and associated mechanical collectors.

### 5.2. Device monitoring

#### 5.2.1. Pressure drop

Cargill Salt will monitor the pressure drop across the multi-clone collector system. Pressure drop will be monitored through the use of manahelic gauges or equivalent devices. Pressure drops that are greater than recommended values indicate that the ductwork system may be malfunctioning or the collection system may be plugged with particulate matter. Conversely, pressure drops that are less than recommended values indicate that system leaks may be present.

#### 5.2.2. Ash silo

A pressure cutoff switch was installed in the water line to the spray nozzles of the air washer, which is connected to the ash silo. This pressure switch shuts the system down when the water pressure drops below 40 psi.

#### 5.2.3. Vacuum gauge

The ash system must pull a sufficient vacuum in order to properly move the ash. Cargill will monitor the vacuum gauge on a daily basis. Low vacuum indicates leakage in the ductwork and piping. High vacuum will include blockage in the system.

### 5.3. Coal boiler multi-clone inspection parameters and frequency

EP001 mechanical collector described above will be inspected regularly. The following parameters, where practical, will be included in the inspections:

#### Daily inspections

- differential pressure ("wc)
- ash hopper is emptied daily
- check for buildup of clinkers in multi-clone ash hopper

#### Monthly inspections

- access doors for possible leaks

#### Annual inspections

- ductwork for possible buildup of dust
- visual check of hopper and cone for deterioration
- bolts and welds for corrosion or deterioration
- fan blades for possible corrosion/abrasion
- fan belt, tension, etc.
- insulation for deterioration.

An example of the type of daily inspection form that will be utilized has been included as Table A-4 of Appendix A of this MAP. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

### 5.4. Ash silo cyclone inspection parameters and frequency

EP005 mechanical collector described above will be inspected regularly. The following parameters, where practical, will be included in the inspections:

#### Daily inspections

- vacuum
- ash hopper is emptied daily

#### Monthly inspections

- inspection of vacuum lines
- access doors for possible leaks

#### Annual inspections

- ductwork for possible buildup of dust
- visual check of hopper and cone for deterioration

- bolts and welds for corrosion or deterioration
- fan blades for possible corrosion/abrasion
- fan belt, tension, etc.
- insulation for deterioration.

An example of the type of daily inspection form that will be utilized has been included as Table A-4 of Appendix A of this MAP. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

### 5.5. Major replacement parts

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the mechanical collectors:

- fan belts
- bolts.

### 5.5. Corrective procedures

If operating parameters deviate from the pre-determined acceptable ranges, Cargill Salt will also conduct inspections of the respective mechanical collector systems.

The following parameters will be included in the mechanical collector system inspections:

- check that the hopper is empty
- inspection of lines and ductwork for leaks or particulate matter buildup.

If buildup of clinkers is identified during the daily inspections there are two options for removing them from the hopper. The first is to rod them out through inspection portals. The second option is to remove them through the hopper manway. The boiler load will be reduced prior to opening the manway.

If, as a result of these inspections, it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

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## 6. Coal Boiler Operations

Cargill Salt operates three coal fired boilers with associated control equipment:

- EGBOILER1/EGBOILER2 - 2 pulverized-coal-fired boilers #1 & #2 (EP001).
  - Electrostatic precipitators
- EGBOILER5 - spreader stoker coal-fired boiler #5 (EP001).
  - Mechanical Collectors
  - Baghouse filter

The baghouse and electrostatic precipitators have a separate preventative maintenance program described in sections 3 and 4. The preventative maintenance program described below deals with operation of the coal boilers themselves.

Proper operation of the coal boilers ensures proper combustion, reduces the quantity of unburned carbon entering the pollution control system, and reduces clinker buildup.

### 6.1. Supervisory personnel

The following supervisory personnel have been designated as being responsible for overseeing the inspection, maintenance, and repair of the coal boilers:

*Wet End Superintendent* – All coal boilers and associated control equipment.

### 6.2. Coal Handling

Proper boiler operation depends upon a consistent flow of quality coal. In order to properly regulate the coal supply the old exterior coal storage has been replaced with a coal unload station and bunker. This has eliminated the storage of coal on the ground at the facility and the weathering of coal exposed for prolonged periods of time.

In order to ensure a consistent quality of coal an agreement has been made with the coal supplier to provide screened coal as specified in section 6.2.2. Incoming coal will be sampled on a monthly basis to ensure adherence with these specifications. Upon installation of new Underthrow stokers that are capable of handling fines, the screening and sampling of the coal will no longer be required.

The Boiler 5 coal storage bunker has a 300 ton capacity which is enough coal to last two to three days. The Boiler 1 & 2 bunker has a 150 ton storage capacity which is enough coal to last at least three days.

### 6.2.1. Inspection parameters and frequency

The coal handling system will be inspected regularly to ensure a constant supply of coal to the boilers. The following parameters, where practical, will be included in the inspections:

#### Weekly Inspections

- Coal sample and analysis (Until underthrow stokers are installed)

#### Monthly inspections

- belt tension
- belt tracking
- belt scrapers
- transition point integrity
- cover integrity
- automatic lubrication
- drive belts and bearings
- conveyer idlers

#### Quarterly Inspections

- quarterly coal analysis from vendor

#### Annual inspections

- structural integrity.

Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

### 6.2.2 Coal Specification

Moisture 4-6%  
Ash 8-8.5%  
Volatile 34-36%  
Btu/lb 13,000  
Sulfur 1-1.5%  
Fusion +2,600 degrees F (initial)  
Sizing 1-1/4 x 1/4 (Max. 10% 1/4" x 0 in railcar at mine)  
\* Proximate analysis

#### **6.2.3. Major replacement parts**

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the coal handling system.

- motors
- drive belts
- bearings

#### **6.2.4. Corrective Actions**

If, as a result of these inspections listed in section 6.2.1, it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

### **6.3. Coal feeding – Stokers and pulverizers**

Once the coal is delivered to the boiler the coal must be properly fed into the boiler to ensure complete and even combustion. Boilers 1 & 2 operate by spraying pulverized coal into the combustion chamber and boiler 5 uses stokers to eject coal as delivered onto the combustion bed.

#### **6.3.1. Inspection parameters and frequency**

The coal feeding system will be inspected regularly to ensure a constant supply of coal to the boilers in the proper form. The following parameters, where practical, will be included in the inspections:

##### Daily inspections

- stokers greased daily
- stoker operation inspected regularly
- pulverizer operations checked regularly
- housekeeping inspection to identify , repair and clean hydraulic leaks

Monthly inspections

- vibration analysis on electric and turbine pulverizers

Annual inspections

- structural integrity.

Daily inspections are part of boiler operator periodic rounds. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

**6.3.2. Major replacement parts**

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the coal handling system.

- pulverizer hammers
- stoker drive chain
- bolts

**6.3.3. Corrective Actions**

If, as a result of these inspections listed in section 6.3.1., it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

## 6.4. Feedwater System

A constant supply of feedwater is essential to the boilers operation. To prevent an unplanned shutdown of the boiler to a feedwater failure the following preventative maintenance procedures will be implemented.

### 6.4.1. Inspection parameters and frequency

#### Daily Inspections

- monitor flow and pressures

#### Monthly inspections

- vibration analysis on electric and turbine pumps

Daily inspections are part of boiler operator periodic rounds. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

### 6.4.2. Major replacement parts

The feedwater system utilizes redundant pump types; electric and turbine. In the event that one system beaks down the other system will provide water until the downed system can be repaired or replaced.

### 6.4.3. Corrective Actions

If, as a result of these inspections listed in section 6.4.1, it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

## 6.5. Combustion Air and Exhaust System

An adequate supply of air is needed for proper combustion. The combustion air system for boilers 1 & 2 is comprised of a common induced draft (ID) fan and a pulverizer fan on each boiler. The combustion air system for boiler 5 is comprised of a forced draft (FD) fan, an ID fan and an overfire air fan. To prevent excess emissions from improper combustion the following preventative maintenance procedures will be implemented.

### 6.5.1. Inspection parameters and frequency

#### Continuous monitors

- boiler 5 overfire air pressure
- boiler 5 FD air flow
- boiler 5 furnace draft
- boilers 1 & 2 furnace draft
- boilers 1 & 2 induced draft

#### Monthly inspections

- vibration analysis on
  - boiler 5 FD fan
  - boiler 5 ID fan
  - #5 overfire air
  - boiler 1 & 2 ID fan
  - boiler 1 & 2 pulverizers

#### Annual inspections

- fan blade conditions
- duct work inspections
- fan drive couplings and belts inspected for wear
- inspect damper control arms for proper operation

Continuous monitors are inspected as part of boiler operator periodic rounds. Monthly and annual inspections will be administered and documented with Cargill's maintenance management system.

### 6.5.2. Major replacement parts

As part of the malfunction abatement procedures, Cargill Salt will maintain an inventory (for quick replacement) of the following major replacement parts for the air handling system

- fan motors
- bolts

- fan belts
- couplings

#### **6.5.3. Corrective Actions**

If, as a result of these inspections listed in section 6.5.1., it is discovered that an equipment malfunction exists, Cargill Salt will immediately initiate the repair process. If Cargill Salt has reason to believe that the malfunction results in an emissions excursion of an applicable emission standard, Cargill Salt will notify MDEQ of the malfunction. Additionally, Cargill Salt will also provide MDEQ with a detailed schedule for correction of the malfunction.

### **6.6. Soot Blowing**

Soot blowing enhances combustion and boiler operations by improving airflow that becomes restricted due to ash build up on the boiler tubes. Ash build up also reduces boiler efficiency due to loss of heat transfer. Conducting periodic soot blowing according to the procedure described in section 6.6.2 will improve the environmental performance of Boiler #5. This procedure and soot blowing frequency will be updated after the gas co-fire and boiler controls are installed on Boiler #5.

#### **6.6.1 Frequency**

Soot blowing will be conducted at least 5 times per calendar week. Soot blowing times will be recorded on the daily soot blowing logs and will be maintained for a period of at least two years.

#### **6.6.2 Procedure**

There are three soot blowers on Boiler 5, one in the firebox and two in the economizer. Each blower consists of a nozzle that rotates 360° and uses 600 lb steam. A soot blow will consist of each blower rotating the full 360° twice.



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## 7. Boiler startup/shutdown procedures

The following sections describe the startup/shutdown procedures, as provided by Cargill Salt, that are implemented for the pulverized coal-fired boilers #1, #2 (EGBOILER1/EGBOILER2), and the spreader stoker coal-fired boiler #5(EGBOILER5).

### 7.1. Pulverized coal-fired boilers

#### 7.1.1. Start-up procedures

The following procedures are followed to start-up either the #1 or #2 pulverized coal-fired boilers:

1. Ensure that the steam drum is vented before filling by opening the drains on the soot blowers.
2. Check all the feedwater supply equipment to ensure you can get a continuous and adequate supply of chemically treated and deaerated feedwater to the boiler. Trace the feedwater piping from supply to boiler insuring that proper valves are opened or closed as the case may be. Know what is going on in the production department to ensure that there is an adequate supply of condensate return to the deaerator.
3. Start the chemical feed pump when you begin filling.
4. All valves on blowdown lines, continuous blowdown, water column and gauge glass drains, and feedwater regulator should be closed.
5. Feedwater should initially be introduced around the feedwater regulator or through the feedwater regulator by-pass.
6. Check valves between drum and water columns and gauge glass valves to insure they are open.
7. Fill with water to about 2" to 3" below the normal operating level, thus allowing room for expansion of water with heating and pressure rise. Fill slowly enough that the deaerator is not drained. Communicate with the watch engineer when filling.
8. Confirm that the coal/air damper on the pulverizer is open about halfway.
9. Confirm that the damper on top of the boiler is open halfway.

10. Confirm that the pan building is ready to accommodate the steam during startup procedures.
11. Turn the ID fan on. If one of the pulverized coal boilers is already operating the fan will already be on. Then adjust the damper on the top of the boiler to full open.
12. Start the oil burner in basement for either furnace, but be sure to start only one oil burner at a time.
13. Confirm that the hoppers are full and the chutes are open.
14. Start a pulverizer with the hydraulic coal feeder in the normal position. Run it about ½ hour before starting a second pulverizer.
15. Once the flue gas has passed through the precipitator long enough to purge the unit of moisture and explosive gas and air mixtures the high voltage system may be energized. When the boiler non-return valve opens there is usually significant purging to start the precipitator.
16. Energize the rapper system.
17. Raise the precipitator operating voltage, one transformer-rectifier set at a time.
18. Check hoppers and confirm that coal is not caught in the hoppers.
19. When the coal is burning well and both pulverizers are operating the oil burner may be shut off. This may be as long as 45 minutes to one hour.
20. As the pressure begins to rise the sootblower drain valve being used as the steam drum vent should be closed.
21. Bring the steam up slowly. It will usually take about an hour to bring steam up to 200 lb. for a warm boiler. It should take longer on a boiler that has been down for a longer period and is cold. The colder the boiler the longer the startup time should take.
22. When the steam pressure approaches 200 lb., you may have to blow the boilers down to lower the drum level. It is advisable to have the water below normal operating level before the 200 lb. cuts in.
23. When the boiler is on-line, set the damper controls on the pulverizers to a minimum of 60%.
24. Confirm that the feedwater line going to the boilers is open and you have a visible flow. Check level often to be sure the feedwater regulator is working.

### 7.1.2. Shut-down procedures

The #1 and #2 pulverized coal-fired boilers are shut down at regular intervals for internal inspections, cleaning, and repair. The following procedures should be followed to shut down either of the two pulverized coal-fired boilers:

1. Shut the feed off to one pulverizer at a time or let the coal run out of the hopper.
2. Cut back on the hydraulic coal feed to lower the load for about 5 to 10 minutes.
3. Shut the hydraulics off for the feeder when it is the furthest on its stroke.
4. Shut the turbine-driven pulverizer off.
5. Shut the other pulverizer off.
6. Let the ID fan run about ½ hour. If the other pulverized boiler is operating the ID fan will be left on.
7. When the feed to the boiler is no longer required, turn off the chemical pump after the non-return steam valve has closed, the main steam stop valve should be closed if someone is to work on the water or steam side of the boiler.
8. The feedwater pump can be shut off if the other pulverized coal feeder is not running.
9. The pressure should be allowed to drop naturally, without opening vents or other direct intervention to remove steam from the unit to hasten the lowering of the steam pressure.
10. Cooling of the furnace should not be hastened by allowing large quantities of cool air to pass through the setting. The use of a moderate amount of induced or natural draft after the furnace brickwork has lost its color is permissible.
11. To prevent a vacuum within the boiler by condensation of steam, the soot blower drain used as a steam drum vent valve should be opened when the steam pressure has dropped to about 25 psi. A vacuum within the unit may cause future leakage of joints with gaskets.
12. Turn the electrostatic precipitator off only if both boilers are shut off. Move the selector switch to manual and turn the precipitator off.

Permit the rappers to operate for one hour with the precipitator power off. Then turn the rapper control switch off.

13. Once the furnace has cooled to a temperature at which one can enter and remain in the furnace, the boiler can be emptied.

## 7.2. Spreader-stoker coal-fired boiler

### 7.2.1. Start-up procedures

The following procedures are followed prior to the start-up of the #5 spreader-stoker coal-fired boiler:

1. Make sure all bearings and chains are properly lubricated.
2. Inspect the coal hoppers to confirm they are empty of debris.
3. Inspect the grates thoroughly for foreign material such as loose bolts, nuts, nails, wood, or bricks.
4. Before filling with water be sure that the drum vent and all superheater vents and drains are open.
5. Check all feedwater supply equipment to ensure you can get a continuous and adequate supply of chemically treated and deaerated feedwater to the boiler. Trace the feedwater piping from supply to boiler ensuring that proper valves are opened or closed as the case may be. Know what is going on in the production department to ensure that there is an adequate supply of condensate return to the deaerator.
6. Start the chemical feed pump when you begin filling.
7. All valves on blowdown lines, continuous blowdown, water column and gauge glass drains, and feedwater regulator should be closed.
8. Feedwater should initially be introduced around the feedwater regulator or through the feedwater regulator by-pass.
9. Check valves between drum and water columns and gauge glass valves to ensure they are open.
10. Fill with water to about 2" to 3" below the normal operating level, thus allowing room for expansion of water with heating and pressure rise. Fill slowly enough that the deaerator is not drained. Communicate with the watch engineer when filling.

11. Check the discharge at the last bearing of the stoker to confirm that water is flowing through the entire system. **Important: Never operate the stoker without having water flowing through the bearing casing.**
12. Fill the coal hopper and start the stoker drive motors.
13. Turn the adjusting screw for fuel distribution clockwise until the spilling plate bears near the inner end of the screw.
14. Pile kindling wood on the grate through the fire doors.
15. When the coal has reached a depth of 1 to 2 inches over the entire grate, disengage the coal feed by backing off the hand wheels and disengaging the feed latches.
16. Light the wood on fire.
17. Open the boiler damper enough so that wood will burn briskly.
18. Open the main forced-draft fan damper or the access door into the air chamber, or both.
19. Add coal gradually by occasionally engaging the feed latches until all coal on the grates is ignited.
20. Turn the slow ID fan on and get the bed of coal burning over the entire grate. The smallest practical fire that will generate steam is recommended at the start. This heat should be spread uniformly across the width of the furnace.
21. Shut the ID fan off.
22. The boiler should then be brought up to pressure gradually in accordance with the following table:

<u>Steam Pressure, psig</u>	<u>Time</u>
1	End of first hour
30	End of second hour
95	End of third hour
215	End of fourth hour
425	End of fifth hour
600	End of sixth hour

23. After pressure has been brought up to about 5 or 10 psi the drain on the intermediate superheater header can be closed. The drain and

vent on the superheater outlet header should be left open until the unit is on line. Drain open 2 turns. Vent open 1-1/2 turns.

24. During that time the boiler outlet header should be checked occasionally. Temperature of the steam coming out of this header should not exceed 700 degrees until the unit is put on line. During this warm up period the boiler should be blown down periodically in order to provide circulation through the economizer as a result of feedwater entering the unit. This will keep the economizer from steaming.
25. Add some more coal gradually, start the ID fan to keep the fire burning and then shut it off again. This approach is repeated for about 3 to 4 hours.
26. The speed controller is used for the coal addition by the stoker. Avoid feeding too much coal and having the fire and steam build too quickly.
27. The slow ID fan now can be left on.
28. The slow FD fan may now be started and the coal feed increased by turning the hand wheel of each feeder clockwise until a clean brisk fire is obtained. If smoke is being emitted from the stack, turn all hand wheels counterclockwise one quarter turn at a time until the stack gas is clear.
29. Check the fuel bed for distribution by observing the fire through the front fire doors and the doors or observation ports in the furnace side walls.
30. Do not allow the coal to accumulate on the rear tuyeres proper. If this occurs, reduce the controller speed for the stokers.
31. Once the fire has been started and the fuel feed and distribution have been adjusted, the grate drive can be started.
32. Adjust the coal feed with the combustion control in the closed or minimum load position to get a clean fire and stack. The furnace draft regulator should now be adjusted to hold the draft in the furnace between fifteen one-hundredths inch (0.15") and two tenths inch (0.2") water column negative pressure.
33. The ash coming off the grate should be 3 to 4 inches deep. If the ash is too thin (2" or less), the grate is moving too fast. Reduce the grate speed.
34. The boiler master is now used to add or reduce the coal feed to the boiler.
35. Sometimes 3"-4" may be too thick due to the clinking characteristics of the ash. When the ash fuses into sheet clinkers with unburned

coke riding forward on top of the clinker, it indicates the grate speed is too slow. If the fuel feed is too heavy, the furnace will be smoky and carbon dioxide will be high. To correct this condition, reduce the coal feed by lowering the boiler master.

36. Approximately 1 hour prior to putting the unit on the line the steam outlet valve should be cracked slightly to permit warm up of the outlet line. It may be necessary to open this valve and then close it periodically.
37. Before the boiler is put on line the drip legs on the steam line should be blown.
38. The baghouse is started after a load of 30,000 lb/hr is obtained. Turn the fans on and check the differential pressure to ensure it is operating properly. This is about ½ hour after the boiler is brought on line.

#### **7.2.2. Shut-down procedures**

The #5 spreader stoker coal-fired boiler is shut down at regular intervals for internal inspections, cleaning, and repair. The following procedures should be followed to shut down the #5 spreader stoker coal-fired boiler:

1. When the boiler and stoker are taken out of service for cleaning and inspections or repairs, the coal hoppers should be emptied before letting the fire go out. If the stoker is stopped with coal in the hoppers, the coal may ignite and cause serious damage to the rotor or feeder assemblies.
2. Slowly cut back the boiler load to 35,000 lb/hr.
3. Before the stop check valve shuts, open and throttle outlet superheater header drain to allow circulation through the superheater.
4. Shut the coal supply off to the stokers and let them run.
5. Run grate until the fire that is on it is off.
6. Allow all fuel in the furnace to burn out while allowing fans to purge the furnace until all such fuel is completely burned. Then shut the fans off.
7. Shut the baghouse fan off.

8. When the feed to boiler is no longer required, turn off the chemical pump after the non-return valve has closed, the main steam stop valve should be closed. The feedwater pump can be shut off.
9. The pressure should be allowed to drop naturally, without opening vents or other direct intervention to remove steam from the unit to hasten the lowering of the steam pressure.
10. Cooling of the furnace should not be hastened by allowing large quantities of cool air to pass through the setting. The use of a moderate amount of induced or natural draft after the furnace brickwork has lost its color is permissible.
11. To prevent a vacuum within the boiler by condensation of steam, the steam drum vent valve should be opened when the steam pressure has dropped to about 25 psi. A vacuum within the unit may cause future leakage of joints with gaskets.
12. Once the furnace has cooled to a temperature at which one can enter and remain in the furnace, the boiler water can be emptied.

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## 8. Gas Boiler Shutdown Procedure

The #6 gas boiler is shut down at regular intervals for internal inspections, cleaning and repair. In the event that the coal boilers will continue to operate during one of these shutdowns, the following procedures should be followed before shutting down the #6 gas boiler.

1. Lower the electric load on the generator. Depending on the circumstances this may include, but is not limited to:
  - A. Shutting down major motors on the dry end (e.g. micro grinders)
  - B. Shutting down the filter pump
  - C. Using steam pumps instead of electric
  - D. Utilizing a rental air compressor
2. Lower steam load on remaining boilers. Depending on the circumstances this may include, but is not limited to:
  - A. Cutting back steam flow to the Alberger systems
  - B. Utilizing rental air compressor
  - C. Shutting down AC generator and switching to purchased power per procedures in section 9.

Once the necessary steps have been taken to minimize the load and swinging potential of the coal boilers, the #6 gas boiler may safely be shut down.

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## 9. Electric Source Switchover Procedure

The standby diesel generator is provided in order to supply emergency cold start power to start either #5 or #6 boiler. Once a boiler is put into operation, the steam turbine generator can be put into operation and AC power restored.

The standby diesel generator will normally be left in automatic. In Automatic, if there is a loss of AC power to the unit substation, the unit substation breaker supplying motor control center #3 will trip, the engine will start and when its frequency and voltage are up to normal, the engine-generator breaker will automatically close. When the unit substation breaker trips, all motor starters will drop, shutting down both boilers.

Once the unit substation breaker trips and the engine generator is supplying M.C.C. #3, the substation breaker will not close. The engine generator must be manually synchronized with the unit substation and the unit substation breaker manually closed. The engine generator breaker is then manually opened and the engine generator shut down.

### 9.1. Automatic Operation - See drawing at end of this section.

1. Westinghouse Engine generator switchgear positions
  - a) Voltmeter and Ammeter switches can be left in Position #1 – Items #14, 15, & 16
  - b) Synchronizing & frequency switches in off position – Items #17, 18, & 19
  - c) Operation selector transfer switch in Auto position. Item #1
2. Engine generator control panel operation selector switch in automatic position.
3. To shut down engine-generator after automatic start-up (see paragraph C & D)

### 9.2. Manual operation for cold start-up

Turbine-generator off and no Edison Power to Boiler House Substation. Pull 4160-volt breaker to substation if Edison Power is fed to 4160-volt switchgear.

1. Westinghouse engine generator switchgear switch positions.
  - a) Volt meter and ammeter switches in position #1 – Item # 14, 15 & 16
  - b) Synchronizing & frequency switches in off position – Item # 17, 18 & 20
  - c) Operation selector transfer switch in manual position – Item # 19

- d) Open unit substation breaker by turning unit substation breaker control switch to open. (Switch will return to center position.) Green indicating light should be on.
- e) Open engine generator breaker by turning engine generator control switch to open. (Switch will return to center position) Green indicating light should be on.
2. Engine generator control panel operation selector switch in Manual position.
3. Push engine generator start button on N-W corner of engine. Engine should start and come up to speed.
4. Check engine generator volts meter Item #3. Voltage should be 475 to 485. Correct if necessary using engine generator voltage adjustment – Item # 13.
5. Turn frequency switch to engine generator position and check frequency. Item # 18 & 4. Frequency should be 61.5.
  - a) To adjust frequency, turn engine generator speed adjustment located on N-W corner of engine.
  - b) When engine generator is on line and under load, frequency should be 59.5 – 60.5. Readjust if necessary.
6. Insert handle in engine generator synchronizing switch and turn on Item # 20.
7. Close engine-generator breaker by turning engine-generator breaker control switch to close (switch will return to center position). Red indicating light should be on.
8. Engine generator is now supplying power to M.C.C. #3. See M.C.C. #3 for equipment connected - Page 7.
9. See Cold start-up procedure for sequence of starting motors.

### **9.3. Synchronizing engine generator and turbine generator**

1. Engine generator running and supplying power to M.C.C. #3.
  - a) Unit substation breaker to M.C.C. #3 open.
  - b) Turbine generator on line and unit substation energized.
2. Turn operation selector switch on Westinghouse engine generator switch gear to manual – Item #19
3. Turn on engine generator and unit substation voltmeters – Item # 14 & 16.
4. Compare engine generator and unit substation voltages – Item #1 & 3. Adjust engine generator voltage – Item #13 so the engine generator voltage is slightly higher than unit substation voltage.

5. Turn frequency switch – Item #18 to unit substation and adjust turbine generator for a frequency of 60 cycles on frequency meter Item #4.
6. Turn frequency switch – Item #18 to engine-generator and adjust engine speed for a frequency  $\frac{1}{2}$  cycle greater than turbine generator on frequency meter Item #4.
  - a) To adjust frequency, turn engine generator speed adjustment located on N-W corner of engine.
7. Insert handle and turn on unit substation synchronizing switch Item #17 (handle may be in the engine generator synchronizing switch – Item #20).
  - a) Adjust the engine generator speed so that the synchroscope – Item #5 rotates slowly in the fast direction. Note: To be sure that the two synchronizing lights – Item #2 are dark when the synchroscope needle points straight up at 12:00 o'clock.
8. When the synchroscope needle is moving slowly in the fast direction and is about at the 11:00 o'clock position, close the unit Substation breaker control switch Item #21. The breaker closes as the synchroscope pointer hits the 12:00 o'clock position.
9. Reduce load on engine generator by reducing engine speed.
10. Open the engine generator breaker using the engine generator breaker control switch – Item #23
11. Turn off unit substation synchronizing switch – Item #17.
12. Turn frequency switch – Item #18 to engine generator and adjust engine speed for a frequency of 61.5 cycles.
  - a) To adjust frequency, turn speed adjustment located on the N-W corner of the engine.
13. Push the stop button on Westinghouse engine generator switchgear to stop engine – Item #12.
14. Turn operation selector switch to auto.
  - a) Engine generator will start and come on line automatically on loss of power to M.C.C. #3.

#### 9.4. Synchronizing engine generator and turbine generator

Turbine generator on line and supply power to M.C.C. #3. Unit substation breaker closed.

1. Westinghouse engine generator switchgear switch positions.

- a) Voltmeter and Ammeter switches in position #1 – Item #14, 15 & 16.
  - b) Synchronizing and frequency switches in off position – Item # 17, 18 & 19.
  - c) Operation selector transfer switch in manual position – Item # 19.
2. Engine generator control panel operation selector switch in manual position.
  3. Push engine generator start button on N-W corner of engine. Engine should start and come up to speed.
  4. Compare engine generator and unit substation voltages – Item #1 & 3. Adjust engine generator voltage Item #13 so that engine generator voltage is slightly higher than unit substation voltage.
  5. Turn frequency switch Item #18 to unit substation and adjust turbine generator for a frequency of approximately 60 cycles on frequency meter - Item #4.
  6. Turn frequency switch Item #18 to engine-generator and adjust engine speed for a frequency  $\frac{1}{2}$  cycle greater than turbine generator on frequency meter – Item #4.
    - a) To adjust frequency, turn engine generator speed adjustment located on N-W corner of engine.
  7. Insert handle and turn on synchronizing switch – Item #20. (Handle may be in the unit substation-synchronizing switch, Item #17).
    - a) Adjust engine generator speed so that the synchroscope Item #5 rotates slowly in the fast direction. Note, to be sure that the two synchronizing lights Item #2 are dark when the synchroscope needle points straight up at 12:00 o'clock.
  8. When the synchroscope needle is moving slowly in the fast direction and is about at the 11:00 o'clock position, close the engine generator breaker using the engine generator breaker control switch – Item #23. The breaker closure operation should be timed so that the breaker closes as the synchroscope pointer hits the 12:00 o'clock position.
  9. Increase load on engine generator by increasing engine speed.
  10. Open the unit substation breaker using the unit substation breaker control switch – Item #20.
    - a) The load on M.C.C. #3 must not be more than 300 kW.
  11. Turn off engine generator synchronizing switch – Item #20.
  12. Turn frequency switch Item #18 to engine generator and adjust engine speed for a frequency of 60 cycles. To adjust frequency, turn speed adjustment located on the N-W corner of the engine.
  13. The engine generator is now supplying all power to M.C.C. #3.

14. The engine generator will operate on (1) boiler to about one-half load with the steam boiler feed pump or one-quarter load with the 480-volt boiler feed pump.
15. The General Service Pump can be operated from the Diesel Generator, if both boilers are off, to supply the fire systems.
  - a) Stop the general service pump.
  - b) Throw the transfer switch from M.C.C. #2 position to M.C.C. #3 position.
  - c) Restart the general service pump. Note: The General Service Pump must never be on M.C.C. #3 except when both boilers are shut down.

WESTINGHOUSE ENGINE GENERATOR SWITCHGEAR

1. Unit substation voltmeter
2. Synchronizing lights
3. Engine generator voltmeter
4. Frequency meter
5. Synchroscope
6. Engine generator ammeter
7. Under voltage and phase sequence relay
8. Over frequency relay
9. Watt hour and demand meter
10. Engine generator reverse power relay
11. Test block
12. Engine generator stop button
13. Engine generator voltage adjustment
14. Unit substation voltmeter switch
15. Engine generator ammeter switch
16. Engine generator voltmeter switch
17. \*Unit substation synchronizing switch
18. Frequency switch (unit sub. – off – engine generator)
19. Operation selector transfer switch (manual – auto)
20. \*Engine generator synchronizing switch
21. Unit substation breaker control switch (open – close)
22. Transfer lock-out

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - AIR QUALITY DIVISION  
INFORMATION REQUIRED FOR EMISSION TEST REPORT REVIEW

1. Introduction
  - a. identification, location and dates of tests
  - b. purpose of testing
  - c. brief description of source
  - d. applicable permit/license number for the process tested
  - e. names, addresses and telephone numbers of the contacts for information regarding the test and the test report
  - f. names and affiliation of all personnel who were present during the testing
2. Summary of Results
  - a. operating data (e.g., production rate, fuel type or composition)
  - b. results expressed in units consistent with the emission limitation applicable to the source
  - c. comparison with emission regulations
3. Source Description
  - a. description of process including operation of emission control equipment
  - b. process flow sheet or diagram (if applicable)
  - c. type and quantity of raw and finished materials processed during the tests
  - d. maximum and normal rated capacity of the process
  - e. description of process instrumentation monitored during the test
4. Sampling and Analytical Procedures
  - a. description of sampling train(s) and field procedures
  - b. description of sample recovery and analytical procedures
  - c. dimensioned sketch showing all sampling ports in relation to breeching and to upstream and downstream disturbances or obstructions of gas flow
  - d. sketch of cross-sectional view of stack indicating traverse point locations and exact diameter or stack size dimensions
5. Test Results and Discussion
  - a. detailed tabulation of results including process operating conditions and flue gas conditions
  - b. discussion of significance of results relative to operating parameters and emission regulations
  - c. discussion of any variations from normal sampling procedures or operating conditions which could have affected the results
  - d. documentation of any process or control equipment upset conditions which occurred during the testing
  - e. in the case of a retest, a description of any changes made to the process or control device since the last test
  - f. results of quality assurance audit sample analyses required by the reference method
  - g. calibration sheets for the dry gas meter, orifice meter, pitot tube, and any other equipment or analytical procedures which require calibration
  - h. sample calculations of all the formulas used to calculate the results
  - i. copies of all field data sheets
  - j. copies of all laboratory data including QA/QC (e.g., blanks, spikes, standards)